



Arborist Report Regarding Trees Marked for Removal by PG&E Contractors on Nevada City Property

**Prepared for:
City of Nevada City
Care of Amy Wolfson, City Planner
317 Broad Street
Nevada City, California**

**Prepared by:
Zeno Acton, ISA Board Certified Master Arborist WE-6881B
ISA Tree Risk Assessment Qualified
American Society of Consulting Arborists Member**

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Introduction

Background

PG&E is planning on completing work along their distribution lines on Nevada City property. They have hired a contractor who has marked trees along their lines for removal. This has resulted in visible and audible concern from community members and deliberation at Nevada City Council meetings.

PG&E's project seeks to go beyond what their organization would call "Routine Vegetation Work" and aims to achieve their edict of "Enhanced Vegetation Management". This strategy not only seeks to bring and maintain their infrastructure into compliance with California Public Resources Codes 4292 and 4293 it is also in response to California Public Utilities Commission Resolution ESRB-4. What follows are the complete text of some pertinent California Public Resources Codes, California Code of Regulations Sections, and a quote from Resolution ESRB-4. These documents are a prerequisite for a deeper understanding of the topic but do not constitute every pertinent document from the annals of legislation and case law.

California Public Resources Code 4292 states, "Except as otherwise provided in Section 4296, any person that owns, controls, operates, or maintains any electrical transmission or distribution line upon any mountainous land, or forest-covered land, brush-covered land, or grass-covered land shall, during such times and in such areas as are determined to be necessary by the director or the agency which has primary responsibility for fire protection of such areas, maintain around and adjacent to any pole or tower which supports a switch, fuse, transformer, lightning arrester, line junction, or dead end or corner pole, a firebreak which consists of a clearing of not less than 10 feet in each direction from the outer circumference of such pole or tower. This section does not, however, apply to any line which is used exclusively as telephone, telegraph, telephone or telegraph messenger call, fire or alarm line, or other line which is classed as a communication circuit by the Public Utilities Commission. The director or the agency which has primary fire protection responsibility for the protection of such areas may permit exceptions from the requirements of this section which are based upon the specific circumstances involved."

The Nevada City Fire Department has primary fire protection responsibilities for the Nevada City owned property of concern in this report.

California Public Resources Code 4293 states, "Except as otherwise provided in Sections 4294 to 4296 , inclusive, any person that owns, controls, operates, or maintains any electrical transmission or distribution line upon any mountainous land, or in forest-covered land, brush-covered land, or grass-covered land shall, during such times and in such areas as are determined to be necessary by the director or the agency which has primary responsibility for the fire protection of such areas, maintain a clearance of the respective distances which are specified in this section in all directions between all vegetation and all conductors which are carrying electric current:

- (a) For any line which is operating at 2,400 or more volts, but less than 72,000 volts, four feet.
- (b) For any line which is operating at 72,000 or more volts, but less than 110,000 volts, six feet.
- (c) For any line which is operating at 110,000 or more volts, 10 feet.

In every case, such distance shall be sufficiently great to furnish the required clearance at any position of the wire, or conductor when the adjacent air temperature is 120 degrees Fahrenheit, or less. Dead trees, old decadent or rotten trees, trees weakened by decay or disease and trees or portions thereof that are leaning toward the line which may contact the line from the side or may fall on the line shall be felled, cut, or trimmed so as to remove such hazard. The director or the agency which has primary responsibility for the fire protection of such areas may permit exceptions from the requirements of this section which are based upon the specific circumstances involved.”

Pertinent provisions to Public Resources Code 4293 include “Minimum Clearance Provisions” listed in California Code of Regulations Title 14 Section 1256 which states.

“§ 1256. Minimum Clearance Provisions -PRC 4293.

Minimum clearance required by PRC 4293 shall be maintained with the specified distances measured at a right angle to the conductor axis at any location outward throughout an arc of 360 degrees. (See Figure 3 this Article.)

Minimum clearance shall include:

- (1) any position through which the conductor may move, considering, among other things, the size and material of the conductor and its span length;
- (2) any position through which the vegetation may sway, considering, among other things, the climatic conditions, including such things as foreseeable wind velocities and temperature, and location, height and species of the vegetation.”

Pertinent exemptions to Public Resources Code 4293 are found in the following California Code of Regulations Title 14 Section 1257.

“§ 1257. Exempt Minimum Clearance Provisions - PRC 4293.

(a) The minimum clearance provisions of PRC 4293 applicable in State Responsibility Areas are exempted:

(1) Where conductors are:

(A) insulated tree wire, maintained with the high density, abrasion resistant outer covering intact, or

(B) insulated self-supporting aerial cable, maintained with the insulation intact, or

(C) supported by sound and living tree trunks from which all dead or decadent branches have been removed.

(2) On areas described in 14 CCR 1255(c).

(3) For mature trees (“Exempt Trees”) whose trunks and major limbs are located more than six inches, but less than the distance required for clearance by PRC 4293, from primary distribution equipment (conductor and energy carrying hardware, generally less than 35 kilovolts).

(A) Exempt Trees must meet all of the following criteria, as confirmed by a Certified Arborist or a Registered Professional Forester:

1. The tree or limb must be six (6) inches or more from the line at all times.
2. The size of the tree or limb at the conductor level must be at least six (6) inches in diameter.
3. The tree must not have “scaffold branches,” below eight and one-half feet from the ground (so the tree cannot be easily climbed).

(B) All Utility Companies with primary distribution conductors in State Responsibility Areas (SRA) of California shall:

1. Inspect Exempt Trees annually to verify they continue to meet the criteria in 14 CCR 1257(a)(3).
 2. Maintain a database of information about Exempt Trees that includes 1) location, using the format of latitude/longitude in decimal degrees (DDD.DDDD Datum WGS84); 2) species; and 3) last date of inspection. If any Utility does not currently maintain such a database it must establish one and provide its initial report to CAL FIRE by July 1, 2013. Utilities may request, and the Director may approve, an extension of time in which to achieve compliance with this reporting requirement.
 3. Report the information required pursuant to 14 CCR 1257(a)(B)(2) above, in an electronically researchable format, annually to CAL FIRE by July 1 of each year for the previous calendar year.
 4. When constructing, installing, replacing, or maintaining primary distribution equipment, prevent the creation of new Exempt Trees, to the extent feasible.
- (C) Where there are site specific indications that a conductor has or will come into contact with an Exempt Tree, or portion thereof as described above, the condition will be corrected either by altering the tree or by applying an engineering solution. The actions taken will be documented in that utility's Exempt Tree database.
- (b) These exemptions do not apply to "Hazard Trees" as identified and explained on pages 1-20 through 1-24 in the Department's "Powerline Fire Prevention Field Guide" dated November 2008 and posted on the Department's website at:
<http://cdfdata.fire.ca.gov/pub/fireplan/fpupload/fppguidepdf126.pdf>."

Here is an updated address for the 2020 Edition of the previously listed field guide.

https://osfm.fire.ca.gov/media/11015/2020-power-line-fire-prevention-field-guide_20200818.pdf

Further relevant back ground information includes California Public Resources Codes 4294, 4295, and 4295.5 Sections a and b.

California Public Resources Code 4294 states, "A clearing to obtain line clearance is not required if self-supporting aerial cable is used. Forked trees, leaning trees, and any other growth which may fall across the line and break it shall, however, be removed."

California Public Resources Code 4295 states, "A person is not required by Section 4292 or 4293 to maintain any clearing on any land if such person does not have the legal right to maintain such clearing, nor do such sections require any person to enter upon or to damage property which is owned by any other person without the consent of the owner of the property."

California public Resources Code 4295.5 states, "(a) Notwithstanding any other law, including Section 4295 , any person who owns, controls, operates, or maintains any electrical transmission or distribution line may traverse land as necessary, regardless of land ownership or express permission to traverse land from the landowner, after providing notice and an opportunity to be heard to the landowner, to prune trees to maintain clearances pursuant to Section 4293 , and to abate, by pruning or removal, any hazardous, dead, rotten, diseased, or structurally defective live trees. The clearances obtained when the pruning is performed shall be at the full discretion of the person that owns, controls, operates, or maintains any electrical transmission or distribution line, but shall be no less than what is required in Section 4293. This section shall apply to both

high fire threat districts, as determined by the California Public Utilities Commission pursuant to its rulemaking authority, and to state responsibility areas.

(b) Nothing in subdivision (a) shall exempt any person who owns, controls, operates, or maintains any electrical transmission or distribution line from liability for damages for the removal of vegetation that is not covered by any easement granted to him or her for the electrical transmission or distribution line.”

California Public Utilities Commission Resolution ESRB-4 states among many other things that “IOUs (Investor Owned Electric Companies) should do the following: increase vegetation inspections and remove hazardous, dead and sick trees and other vegetation near the IOUs’ electric power lines and poles;...” (**Public Utilities Commission, Res. ESRB-4, 6**).

Assignment

At the request of Amy Wolfson, City Planner, I agreed to inspect select trees for The City of Nevada City that had been marked for removal by PG&E contractors. Two lists of trees were provided to me and I was given permission to inspect other marked trees on city property. We agreed that I would provide my observations and opinions regarding tree health, structure, risk, and provide mitigation options with residual risks.

Limits of Assignment

Trees are complex organisms and can have hidden structural defects or maladies that can lead to tree death or failure. In addition, unforeseen forces may be involved. For these reasons, I cannot and will not guarantee the health or safety of any tree. The opinions of tree health, structure, and risk provided were developed under the limitations of a **basic tree inspection** (see the Glossary).

Certification

The information contained in this document is intended to be an objective and unbiased assessment based on conditions present at the time of my inspection. I certify that all of the statements in this report are true, complete and correct to the best of my knowledge and belief, and that they are made in good faith. I aim to provide the responsible parties a well-reasoned evaluation so that they may make informed decisions. Payment for my services was not contingent upon my findings.

Purpose and Use of the Report

This report is to be utilized by The City of Nevada City to aid in decision making and may be shared or not shared with other parties at the discretion of city officials.

Observations

On September 9th, 10th, and 13th I completed basic tree inspections of 38 trees and have attached a pdf document with detailed information regarding my observations of each tree.

Data Collection and Analysis

Each tree inspected was given the number that was provided to me by city staff. I included five trees that I was not asked to inspect and was not provided a number for. I assigned these trees the letter “Z” followed by a number. During my inspections I verified tree species, recorded tree

diameter at **breast height** (often utilizing the diameter sprayed on the tree by a PG&E contractor), geographically located each tree (see Maps of Tree Locations on page 9, a kml file is also attached), provided a health/vigor rating, structure rating, risk rating, took notes, and provided recommendations. Each tree was assigned a health/vigor and a structure rating of very poor, poor, fair, good, or excellent. A risk rating was then assigned to each tree following International Society of Arboriculture Best Management Practices for Tree Risk Assessment (Smiley, et al. 15). This industry standard utilizes four risk ratings; low, moderate, high, and extreme. These ratings were arrived at considering the perceived likelihood of tree failure, the perceived likelihood of the tree or tree part impacting an electrical conductor or pole, and the perceived consequences. I included in the notes the likelihood of failure, impact, and consequences for the highest risk portion of the tree. Likelihood of failure and risk ratings were arrived at considering a one-year time frame and under the constraints of a basic tree inspection.

I provided notes regarding the signs and symptoms of diseases, pests, and structural conditions. In some instances, I provided information regarding pertinent tree heights or distance from the lines. A range finder was utilized to aid in these measurements. To gather and record my observations and opinions I utilized an Apple iPad and Urban Forest Metrix software.

Discussion

As outlined in the background information I provided, PG&E has a legal responsibility to maintain vegetation around their infrastructure to a specified standard and protect it from failing trees and tree parts. Legally required clearances are based on voltage and are detailed in California Public Resources Code 4293. However, as outlined in California Public Resources Code 4295.5 (a), they have full discretion to exceed required pruning distances in order to maintain clearance for their desired time frame. PG&E's "Enhanced Vegetation Management" edict seeks 12 feet of clearance at the time of pruning or tree removal with no branches left over hanging the lines. In addition, their edict appears to align with California Public Resources Code 4293 which again states that, "Dead trees, old decadent or rotten trees, trees weakened by decay or disease and trees or portions thereof that are leaning toward the line which may contact the line from the side or may fall on the line shall be felled, cut, or trimmed so as to remove such hazard. The director or the agency which has primary responsibility for the fire protection of such areas may permit exceptions from the requirements of this section which are based upon the specific circumstances involved."

Therefore, there seem to be limited ways to challenge a particular mitigation measure selected by PG&E or their contractors. One could take legal action, one could seek to change legislation, one could convince the fire protection agency to require less stringent standards and hope PG&E agrees and complies, or one could convince PG&E through reason that a tree was not accurately evaluated or has a risk that can be mitigated for in another way. The trees that I have listed as being in fair or better health and low risk (or could be made into low risk trees) whose main stems are outside of 12 feet from the lines could be good candidates to broach with a well-reasoned argument. Even some trees in poor health that have fair or better structure could be argued for if desired as well as trees that lack **latent buds**, like incense cedars and ponderosa pines, who are otherwise acceptable but are at or inside 12 feet from the lines. It is not only PG&E's responsibility to provide property owners with notice of work but also their responsibility to listen to concerns and act in a reasonable manner.

Multiple questions and concerns arouse during my inspections. One particular concern I noted is that the mere presence of some pests and diseases may have been inappropriately interpreted on some trees by PG&E contractors. The concern is that such an observation does not necessarily mean the tree is significantly weakened nor does that necessarily equate to an increased likelihood of failure. Legislation allows for the removal of diseased or infested trees but this needs to be tempered with knowledge of the site, the infecting agent and its effect on the host. The practicing arborist knows every tree has some disease or pest present. Western gall rust (*Endocronartium harknessii*) is a locally abundant fungal disease on ponderosa pines and its presence may well have been misinterpreted on some individuals in this manner. This disease is spread by spores and will continue to infect and kill off growing terminals. Ponderosa pines lack latent buds and cannot regenerate new branches from the main stem. Because of this, the photosynthetic capabilities of a tree are often diminished overtime. The disease can slow growth and contribute to tree decline and eventually death. However, death can take many decades. Infections primarily affect tree health and not structure with two exceptions. The most obvious exception is when the main leader becomes infected but survives. The canker that develops over time can create a localized defect and secondary decay pathogens at this site can further compromise tissue. A canker such as this, along the main stem, can result in a significant structural defect. A more subtle structural concern would be that an infected tree, with its diminished photosynthetic capabilities, will not effectively wall off decay or put new growth on in advance of a progressing decay pathogen. I find this confounding structural concern to be appropriate if a decay pathogen or crack is known to be present.

A further concern of mine is that symptoms of a condition do not necessarily mean a condition is present. Given the large quantity of trees inspected by PG&E it is easy to see how contractors would favor interpreting every abnormality as a potential defect. This is, of course, not the case. Given the time, an arborist can often perform an advanced inspection to see if the symptoms present are in fact problematic for tree health or structure. PG&E contractors may not have time for such activities. However, in a dispute over the condition of a particular tree, an advanced inspection can provide important insight.

A number of trees may have been marked for removal because of the erroneous belief that removing one third or more of the foliage of a tree will have a high likelihood of killing it. This guideline is a general rule repeated to tree pruners to implore them to exercise discretion. Judicious pruning is often advisable. However, there are many instances when it is quite appropriate to remove more than one third of the foliage of a tree to improve long term structure, or health or to mitigate for tree risk or conflict. The affect of such pruning on the tree depends on the species, it's condition, and site factors. Further, ponderosa pine branches and other conifers can, in some situations, have their branches reduced rather than entirely removed to obtain clearance and prevent overhang. This can significantly reduce the removal of foliage and may not have been considered for some of the trees I inspected.

Perhaps the greatest separation in my evaluations/conclusions and the evaluations/conclusions of PG&E contractors is at the level of methodology and interpretation of failure likelihoods. I follow International Society of Arboriculture Best Management Practices for Tree Risk Assessment and utilize their terminology and methodology. Thus, I assign likelihoods of failure as being either imminent, probable, possible, or improbable. This is similar to the 2020 Edition

of the California Power Line Fire Prevention Field Guide's adaptation of the International Society of Arboriculture's methodology. In this publication that was developed in a collaborative effort by CalFire and The State of California Public Utilities Commission and was funded in part by PG&E, the authors layout the following on pages 51 and 52.

"Categorizing the Likelihood of Failure

The likelihood of failure within a specified time frame can be categorized using the following guidelines:

- ☐ Imminent: Failure has started or is most likely to occur very soon. Immediate action may be required.
- ☐ Likely: Failure may be expected under normal conditions.
- ☐ Possible: Failure may be expected in extreme conditions, but it is unlikely during normal conditions.
- ☐ Unlikely: The tree or branch is not likely to fail during normal conditions and may not fail in extreme conditions.

The decision to abate a tree should be properly documented."

These terms and rationale are synonymous with those that I utilize and are the standard for the industry at large. In addition, the authors comment that decisions should be properly documented, is particularly relevant.

Fourteen of the ponderosa pines I inspected had concerning structural conditions that I believe there is no reasonable way to mitigate for other than tree removal. These trees had defects that would require heavy crown reductions or irrationally constructed tree support systems to reduce risk. Such measures would likely be a waste of resources. This was determined based on each tree's health condition. Further, the species lack of latent buds and therefore lack of ability to generate a new low crown and its susceptibility to bark beetles makes heavy crown reductions inappropriate.

The atlas cedar I inspected is apparently of most importance to the city and community. To obtain 12 feet of stem and branch clearance from the pole and lines would require removal of the most important parts of the tree, including at least one of the leaders. Further, removing the large lower branches may be required to obtain 8 feet of ground clearance. One of these lower branches may require removal, in any case, as it is interfering with the pole's guy-line. The feasibility of moving the guy-line is outside of my expertise and would require the input of an engineer. Likewise, the feasibility of moving the pole and therefore preventing the conflict is beyond my scope. The only other thing to consider is that, as mentioned previously, California Code of Regulations Title 14 Section 1257, provides for the exemption of certain mature trees from California Public Resources Code 4293 requirements. PG&E is required to keep an "Exempt Tree Database". At this time, I have no knowledge of the existence of any trees in The City of Nevada City that are in the "Exempt Tree Database". PG&E may be able to supply a copy of their "Exempt Tree Database". In addition, the Nevada City Fire Department could be contacted to see if an inspection by an ISA Certified Arborist or Registered Professional Forester of the atlas cedar would be of interest to them in nominating it for, or determining continued inclusion in, the "Exempt Tree Database". I would be happy to provide an advanced inspection to this end.

Conclusions

My objective analysis of each tree and my nuanced opinions provided are aimed to assist in decision making. Of the 38 trees I inspected I believe good faith conversations regarding retention could be had regarding 16 of the trees. These trees, which include some trees that are, in my opinion, in poor health, are Z3, Z4, Z5, 12, 14, 16, 40, 45, 48, 84, 86, 90, 128, 134, 147, and 190. If poor health trees are eliminated from this list, twelve trees are left; Z3, Z4, 12, 14, 16, 40, 48, 84, 90, 134, 147, and 190. City leadership may choose to prioritize tree retainment in vastly different ways based on both considerations explored here and those beyond the scope my assessment. PG&E may be open to re-inspecting all or part of the trees I inspected. A request to have inspections follow the methodology laid out in the 2020 Edition of the California Power Line Fire Prevention Field Guide and under the supervision of an ISA Certified Arborist who is Tree Risk Assessment Qualified, would ensure greater continuity of terminology between my observations and opinions and that of the PG&E inspectors.

If you have further questions regarding individual trees please let me know. In addition, if you would like to have me engage in a discussion with PG&E employees or contractors regarding individual trees, I would be happy to do so. I always welcome good faith discussions and I am open to differing perspectives and new information.

Glossary

Basic Tree Inspection - "A detailed visual inspection of a tree and its surrounding site, and a synthesis of the information collected. It requires that a tree risk assessor walk completely around the tree--looking at the site, buttress roots, trunk, and branches. A basic assessment may include the use of simple tools to gain additional information about the tree or defects" (**Smiley, et al. 15**).

Breast Height – The industry standard for breast height is 4.5 feet off of the ground.

Latent Buds – Buds that lay dormant in stems and are capable of forming new shoots.

Root Crown – The location on a tree where the root system meets the stem or stems.

Works Cited

Cal Fire/State of California Public Utilities Commission. "Power Line Fire Prevention Field Guide." 2020 Edition.

Public Utilities Commission, Resolution ESRB-4, June 16, 2014.

Smiley, T., N. Matheny, and S. Lilly. Best Management Practices: Tree Risk Assessment. Champaign, IL: International Society of Arboriculture, 2011.

Maps of Tree Locations (excluding 14 and 190)

